

10CFR50.73

July 27, 2011

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Limerick Generating Station, Unit 2
Facility Operating License No. NPF-85
NRC Docket No. 50-353

Subject: LER 2011-004-00, Automatic Actuation of the Reactor
Protection System Due to Actuation of the Turbine
Control Valve Fast Closure Logic

This Licensee Event Report (LER) addresses an event that resulted in an automatic actuation of the reactor protection system due to an actuation of the turbine control valve fast closure logic. The actuation occurred during restoration of a main turbine control valve following maintenance.

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv)(A).

There are no commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

Original signed by Peter A. Gardner for

William F. Maguire
Vice President - Limerick Generating Station
Exelon Generation Company, LLC

cc: USNRC Administrator Region I
USNRC Senior Resident Inspector, LGS

LICENSEE EVENT REPORT (LER)(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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4. TITLE Automatic Actuation of the Reactor Protection System Due To Actuation Of Turbine Control Valve Closure Logic
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5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	29	2011	2011	- 004 -	00	07	27	2011		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)
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1	<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.38(c)(1)(i)(A) <input type="checkbox"/> 50.38(c)(1)(ii)(A) <input type="checkbox"/> 50.38(c)(2) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(iii) <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 50.73(a)(2)(ix)(A) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71(a)(4) <input type="checkbox"/> 73.71(a)(5) <input type="checkbox"/> OTHER Specify in Abstract below or in NRC Form 366A
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12. LICENSEE CONTACT FOR THIS LER	
NAME John G. Hunter III, Manager - Regulatory Assurance	TELEPHONE NUMBER (Include Area Code) 610-718-3400

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	TA	V	G080	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

An automatic actuation of the Unit 2 reactor protection system occurred due to an actuation of the turbine control valve fast closure logic. The actuation occurred during restoration from maintenance on a main turbine control valve. The "A1" channel of turbine control valve fast closure logic was placed in the trip condition during the maintenance. The "B1" channel tripped when the electrohydraulic control relayed emergency trip supply oil supply was restored to the control valve. The root cause of the event was a void in the electrohydraulic control relayed emergency trip supply oil supply line that resulted in a perturbation of the oil supply pressure at the adjacent control valve. A procedure will be developed and implemented to provide specific restoration steps for turbine control, stop, and combined intermediate valves.

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NARRATIVE

Unit Conditions Prior to the Event

Unit 2 was in Operational Condition (OPCON) 1 (Power Operation) at approximately 75% power. Main turbine control valve CV-3 was closed due to in-progress corrective maintenance and the "A1" channel of the reactor protection system (RPS) was in the tripped condition due to the valve maintenance.

Description of the Event

On Sunday, May 29, 2011, Limerick Unit 2 was operating at 75% power. The "A1" channel of the reactor protection system (RPS) (EIIS:JC) was in the tripped condition due to in-progress corrective maintenance on main turbine control valve CV-3 (EIIS:V). At 0502 hours, during restoration of CV-3, the electrohydraulic control (EHC) (EIIS:TG) relayed emergency trip supply (RETS) valve (031-2013) to CV-3 was opened. A pressure drop in EHC RETS oil pressure was sensed at adjacent main turbine control valve CV-1 which actuated the "B1" channel of the reactor protection system. A full scram resulted and all control rods inserted. All safety significant systems functioned as expected. The 2A and 2B reactor recirculation pumps (EIIS:AD) tripped as designed.

The operating crew stabilized the plant using the appropriate Transient Response and Operating Procedures. The lowest transient reactor level observed on the plant monitoring system (PMS) was plus 4 inches. The digital feedwater level control system (DFWLC) responded as designed. There was no emergency core cooling system (ECCS) actuation. The only automatic isolation actuated was the expected plus 12.5 inch isolation signal for Group IIB. All main turbine supervisory functions and main generator protective relaying functioned as designed.

An investigation determined that an air void in the EHC RETS oil line caused a decrease in EHC RETS oil pressure at the CV-1 RETS pressure switch when the EHC supply valve was throttled open during restoration of CV-3.

A 4-hour NRC ENS notification was required by 10CFR50.72(b)(2)(iv)(B) for an actuation of RPS when the reactor was critical. An 8-hour NRC ENS notification was required by 10CFR50.72(b)(3)(iv)(A) for a valid actuation of RPS. The ENS notification (#46903) was completed on Sunday, May 29, 2011 at 07:10 ET. This event involved an automatic actuation of RPS. Therefore, this LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv)(A).

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Analysis of the Event

There were no actual safety consequences associated with this event. The potential safety consequences of this event were minimal. The plant equipment performed as designed during the transient. The operators effectively stabilized reactor parameters.

On May 28, 2011, CV-3 failed to re-open during the quarterly main turbine control valve exercise and RPS functional testing (ST-6-001-765-2). Initial troubleshooting identified flow noise indicating that the disc dump valve was not seated. The fast acting solenoid and shutoff valve associated with CV-3 were identified as potential causes for the valve failure. Based on operating experience, a plan was developed to replace the fast acting solenoid and shutoff valve and restore them to service including a controlled restoration of fluid pressure and flushing to remove air entrapped during component replacement. During the maintenance the "A1" RPS channel was placed in the tripped condition to satisfy the TS 3.3.1 RPS instrumentation action for the inoperable turbine control valve fast closure channel.

The sequence used to restore EHC pressure involved opening the EHC oil supply ball valve 031-2013. The valve was opened slowly by sequentially opening the valve to approximately 10% open and allowing time for pressure to equalize. During the third evolution to slowly open valve 031-2013 the full scram signal occurred when the EHC oil pressure switch associated with CV-1 actuated. A postulated void in the EHC RETS oil line was pressurized when valve 031-2013 was reopened resulting in a pressure transient within the EHC RETS oil line.

The EHC oil supply valve that was being opened at the time of the event is located on the RETS line to CV-3. This header supplies EHC oil to the turbine control valves and intercept valves and seats the disc dump valves of the control valves after passing through the fast acting solenoid valve.

Cause of the Event

The root cause of the event was a void in the electrohydraulic control oil supply line that resulted in a perturbation of the oil supply pressure at the adjacent control valve.

Corrective Action Completed

Main turbine control valve CV-3 was repaired and restored to service.

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NARRATIVE

Corrective Action Planned

A procedure will be developed and implemented to provide specific restoration steps for turbine control, stop, and combined intermediate valves.

Previous Similar Occurrences

There was no similar event in the last 3 years.

Component data:

Equipment: Main Turbine Control Valve
Component Number: CV-001-3
Manufacturer: G080 General Electric Company
Model Number: 823E838 DWG

Equipment: Main Turbine Control Valve Operator
Component Number: CV-001-3-OP
Manufacturer: G080 General Electric Company
Model Number: 944D549 DWG

Equipment: CV-001-3 RETS EHC Isolation Valve
Component Number: 031-2013
Manufacturer: W165 Whitey Company
Model Number: SS-65ESW16T

Equipment: CV-001-1 RETS Pressure Switch
Component Number: PS-001-202C
Manufacturer: B070 Barksdale Control Division /
Delaval Inc
Model Number: TC9622-3-V